

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listing of claims in the application. Please add new claims 45-69 as follows.

1-44. (Canceled)

45. (New) An endoscopic system, comprising:

an endoscope including at least two lumens and having a proximal and a distal end;
an extension arm passing through one of the lumens to the distal end of the endoscope;
and

a vision head attached to a distal end of the extension arm, the vision head being configured to extend away from the distal end of the endoscope to permit retrograde vision, a proximal side of the vision head including a vision chip for obtaining an image.

46. (New) The endoscopic system of claim 45, wherein one of the at least two lumens is a working lumen configured to receive surgical tools.

47. (New) The endoscopic system of claim 45, wherein the vision head further includes a second vision chip on a distal side thereof.

48. (New) The endoscopic system of claim 45, wherein the vision head includes at least one light source.

49. (New) The endoscopic system of claim 45, wherein the vision head is moveable toward and away from the distal end of the endoscope on the extension arm.

50. (New) An endoscopic system, comprising:
an endoscope including at least two lumens and having a proximal and a distal end;
an extension arm passing through one of the lumens to the distal end of the endoscope;
and

a vision head connected to a distal end of the extension arm, a distal face of the vision head including a distal vision chip and being configured to obtain a forward-looking image when the head is adjacent to the distal end of the endoscope, and a proximal face of the vision head including a proximal vision chip and being configured to obtain a backward-looking image when the vision head is spaced away from the distal end of the endoscope.

51. (New) The endoscopic system of claim 50, further comprising an actuator for controlling movement of the extension arm and the vision head.

52. (New) The endoscopic system of claim 51, wherein the actuator is configured to control extension, retraction, and rotation of the arm and vision head.

53. (New) The endoscopic system of claim 50, wherein the vision head is connected to the extension arm in a manner that permits articulation of the vision head relative to the extension arm, and further comprising an angular control for controlling articulation of the vision head with respect to the extension arm.

54. (New) The endoscopic system of claim 53, wherein the arm is connected to the vision head by a ball joint.

55. (New) An endoscopic system, comprising:
an endoscope including at least two lumens and having a proximal and a distal end, the distal end of the endoscope having a vision chip;
an extension arm passing through one of the lumens of the distal end of the endoscope;
and
a mirror connected to a distal end of the extension arm, the mirror being extendable, rotatable, and angled relative to the extension arm to provide a maximum field of vision.

56. (New) The endoscopic system of claim 55, wherein the mirror is moveable toward and away from the distal end of the endoscope on the extension arm.

57. (New) The endoscopic system of claim 55, wherein the mirror is a parabolic mirror.

58. (New) The endoscopic system of claim 57, wherein a parabolic surface of the mirror faces the distal end of the endoscope.

59. (New) The endoscopic system of claim 55, wherein the vision chip is positioned to obtain an image reflected in a mirrored surface of the mirror.

60. (New) The endoscopic system of claim 59, further comprising distortion correction means for correcting distortion of the image due to the mirror.
61. (New) A method of providing retrograde vision with an endoscopic system, comprising:
providing an endoscopic system comprising an endoscope, a distal end of the endoscope having a vision chip, an extension arm passing through a lumen of the endoscope to the distal end of the endoscope, and a mirror connected to a distal end of the extension arm;
placing the mirror and the distal end of the endoscope into a body lumen;
extending the mirror away from the distal end of the endoscope;
retrograde viewing an image with the mirror;
obtaining the retrograde image reflected in the mirror with the vision chip; and
correcting distortion of the image caused by the mirror.
62. (New) The method of claim 61, further comprising transmitting the image to a video display.
63. (New) The method of claim 61, wherein extending the mirror away from the distal end of the endoscope includes moving the mirror with the extension arm.
64. (New) The method of claim 61, wherein providing the mirror connected to the distal end of the extension arm includes providing a parabolic mirror.

65. (New) The method of claim 64, wherein providing the parabolic mirror includes providing the mirror such that a parabolic surface of the mirror faces the distal end of the endoscope.

66. (New) A method for obtaining images of a surgical site with an endoscopic system, comprising:

providing an endoscopic system comprising an endoscope, a vision head having proximal and distal faces, each face including a vision chip, and an extension arm passing through a lumen of the endoscope to a distal end of the endoscope, a distal end of the extension arm being connected to the vision head;

placing the vision head and the distal end of the endoscope into a body lumen; forwardly viewing an image with the vision chip in the distal face of the vision head while the vision head is adjacent to the distal end of the endoscope;

extending the vision head away from the distal end of the endoscope; and retrogradely viewing an image with the vision chip in the proximal face of the vision head while the vision head is spaced away from the distal end of the endoscope.

67. (New) The method of claim 66, further comprising controlling movement of the extension arm and the vision head with an actuator at the proximal end of the endoscope.

68. (New) The method of claim 67, wherein controlling movement includes extending the arm, retracting the arm, and rotating the vision head.

69. (New) The method of claim 66, further comprising controlling articulation of the vision head relative to the extension arm to provide a maximum field of view.